



Family 15h Models 00h-0Fh AMD FX™-Series Processor Product Data Sheet

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Revision History

Date	Revision	Description
October 2011	3.00	Initial Public Release.

1 Features

The following is a list of features and capabilities of the Family 15h Models 00h-0Fh AMD FX™-Series processor.

- **Compatible with Existing 32-Bit and 64-Bit Code Base**
 - Including support for SSE, SSE2, SSE3, SSE4a, SSE4.1, SSE4.2, SSSE3, ABM, AVX, AES, XSAVE/XRSTOR, PCLMULQDQ, FMA4, XOP, MMX™, and legacy x86 instructions
 - Runs existing operating systems and drivers
 - Local APIC on the chip
 - Light Weight Process (LWP) support
- **AMD64 Technology**
 - AMD64 technology instruction-set extensions
 - 64-bit integer registers, 48-bit addresses
 - Sixteen 64-bit integer registers
 - Sixteen 128-bit SSE/SSE2/SSE3/SSE4a registers
- **Family 15h Architecture**
 - FPU shared between two cores
 - Support for up to 8 cores per node
- **Machine-Check Architecture**
 - Includes hardware scrubbing of L3 ECC-protected arrays
- **Cache Structures**
 - **16-Kbyte 4-Way Associative, Write-through ECC-Protected L1 Data Cache per Core**
 - Two 64-bit operations per cycle, 3-cycle latency
 - **64-Kbyte 2-Way Associative Parity-Protected L1 Instruction Cache Shared between Two Cores**
 - With advanced branch prediction
 - **1024-Kbyte 16-Way Associative ECC-Protected L2 Cache Shared between Two Cores**
 - Exclusive cache architecture storage in addition to L1 caches
 - **8192-Kbyte (8-Mbyte) Maximum 64-way Associative Cache Shared between All Cores on a Node**
 - Shared cache architecture storage in addition to exclusive L1 and L2 caches
- **Flexible Floating-Point Unit**
 - 256-bit shared or two dedicated 128-bit floating-point units (FPU)
 - Shared between two cores
- **Management and Virtualization Features**
 - Advanced Platform Management Link (APML)
 - SMBus v2.0-compatible interface
 - Remote-Management Interface (SB-RMI)
 - AMD Virtualization™ technology (AMD-V™)
 - SVM pause count capability
 - SVM disable and lock
 - Rapid virtualization indexing (nested paging)
 - Improved world-switch speed

- **Power Management**

- Multiple low-power states
- Advanced Power Management
- AMD Turbo CORE technology 2.0 with per core power gating
- System Management Mode (SMM)
- Hardware Thermal Control (HTC)
- ACPI-compliant, including support for processor performance states
- Supported power states: C0, C1, C1E, C6, CC6, S0, S3, S4, and S5

- **Electrical Interfaces**

- DDR3 SDRAM: Compliant with JEDEC DDR3 1.5-V SDRAM specifications
- Refer to the *AMD Family 15h Models 00-0Fh Processor Electrical Data Sheet*, order# 47079, for electrical details of AMD Family 15h processors.

- **HyperTransport™ Technology**

- HyperTransport™ 3 technology supported
- Maximum one (1) link on AM3r2 package, 16-bits in each direction, supporting up to 5200 MT/s (10.4 GB/s) in each direction in HyperTransport Generation 3.0 mode

- **Integrated Memory Controller**

- AMD Memory Controller PowerCap
- Low-latency, high-bandwidth
- DRAM Prefetcher:
 - Adaptive prefetching support
 - 32-entry DRAM prefetch table
 - Differentiate between core prefetch requests and core demand requests
- ECC checking with double-bit detect and single-bit correct
- 144-bit DDR3 SDRAM controller operating at frequencies up to 1866 MT/s (933 MHz)
- Package AM3r2
 - Supports up to four (4) unbuffered DIMMs

- **Available Packages**

- Compliant with RoHS (EU Directive 2002/95/EC) with lead used only in small amounts in specifically exempted applications
- Package AM3r2
 - Refer to the *AM3r2 Processor Functional Data Sheet*, order# 47707, for functional and mechanical details of the AM3r2 package processor.
 - 940-pin lidded micro PGA package
 - 1.27-mm pin pitch
 - 31-row x 31-col pin array
 - C4 die attach

2 Compatible Socket Infrastructures

Refer to the AMD *Infrastructure Roadmap*, order# 41842, for information on platform-feature implications of package and socket-infrastructure combinations. Family 15h Models 00h-0Fh AMD FX™-Series processors support the following socket infrastructures:

- **AM3r2 Socket Infrastructure**

- Compatible with AM3 and AM3r2 package processors
- Refer to the *AM3r2 Processor Functional Data Sheet*, order# 47707, for functional and mechanical details of the AM3r2 socket infrastructure.